

Iodine Clock Reaction

Introduction

This demo shows a chemical reaction which can be used to show how concentration affects reaction rates

STANDARD 3240-01 Students will observe and describe chemical and physical change.

OBJECTIVE

3240-0101 Differentiate between common chemical and physical changes.

3240-0102 Analyze factors that influence chemical and physical change.

INTENDED LEARNING OUTCOMES

- 1a. Make observations and measurements
- 2d. Collect and record data using procedures designed to minimize error.
- 2e. Analyze data and draw warranted inferences.

Solutions

- Chemical A
 - 400 mL. Distilled Water
 - 1.6 grams of KIO_3
- Chemical B
 - 320 mL. Distilled Water
 - 1.6 gram powder starch: add a little water and make into paste
 - 1 gram $\text{Na}_2\text{S}_2\text{O}_5$ Sodium Metabisulfite
 - 2 mL. concentrated H_2SO_4 Sulfuric Acid
- Add starch to 320 ml boiling water, boil for 2 more minutes. When solution is cool to touch add Sodium metabisulfite and sulfuric acid. Add an additional 500 mL. of distilled water to the solution.

Procedures

1. Pour 50 mL of Chemical A into a 250 ml-liter flask.
2. Pour 50 mL of Chemical B into the same flask.
3. Time how long it takes for the reaction to be completed, mark it on a graph on the board.
4. Mix 40 mL of chemical A with 10 mL of distilled water and 50 mL of chemical B, time the reaction and mark it on a graph on the board.
5. Mix 30 mL of chemical A with 20 mL of distilled water and 50 mL of chemical B, time the reaction and mark it on a graph on the board.
6. Mix 20 mL of chemical A with 30 mL of distilled water and 50 mL of chemical B, time the reaction and mark it on a graph on the board.
7. Mix 10 mL of chemical A with 40 mL of distilled water and 50 mL of chemical B, time the reaction and mark it on a graph on the board.

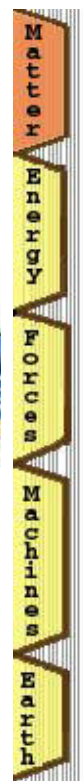
Safety concerns:

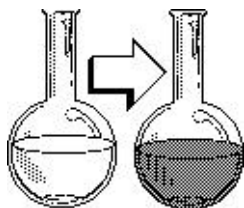


Teachers and students, be sure to keep all Chemical and Fire Safety Rules that are specified by your teacher and in all general laboratory experiences. Remember to wear an apron to keep the chemicals off your clothing.

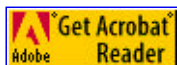
Analysis

1. What happened to the reaction rate as you diluted solution A?
2. Why do you think the reaction change speed?
3. Predict what would happen if we increased the concentration of solution A? Defend your answer.





[Print this page](#) in Adobe Acrobat format.



Visit the [Utah State 8th Grade Integrated Science Core Curriculum Page](#).

Updated August 7, 2000 by: [Glen Westbrook](#)

[Science Home Page](#) | [Curriculum Home Page](#) | [Core Home Page](#) | [USOE Home Page](#)

[Copyright](#) © by the Utah State Office of Education.